Consolidation of Grade 3 EQAO Questions

Geometry and Spatial Sense

Compiled by Devika William-Yu (SE2 Math Coach)

GRADE THREE EQAO QUESTIONS: Geometry and Spatial Sense

Overall Expectations

GV1	• compare two-dimensional shapes and three-dimensional figures and sort them by their geometric properties
GV2	• describe relationships between two-dimensional shapes, and between two dimensional shapes and three-dimensional figures
GV3	• identify and describe the locations and movements of shapes and objects

Year	GV1	GV2	GV3
Spring 2006	MC14 MC19 OR11	MC20	MC15 MC33 OR30
Spring 2007	MC14 MC25	MC15 OR29	MC24 OR9
Spring 2008	MC34 MC35 OR28	MC22	MC23 OR8
Spring 2009	MC36	MC22 MC34	MC23 OR9 OR29
Spring 2010	MC22	MC21 MC35 OR7	MC33 OR25
Spring 2011	MC30	MC25 MC36 OR8	MC16 OR9

GRADE THREE EQAO QUESTIONS: Geometry and Spatial Sense

Year	Knowledge & Understanding	Problem Solving (Thinking)	Application
Spring 2009	MC22 MC34		MC23 MC36 OR9 OR29
Spring 2010	MC21 MC35	OR7	MC22 MC33 OR25
Spring 2011	MC30 MC36	OR8	MC16 MC25 OR9

GEOMETRY AND SPATIAL SENSE: Geometric Properties

Grade 2	Grade 3	Grade 4
Overall Expectation #1		
- Identify two-dimensional shapes and three-dimensional figures and sort and classify them by their geometric properties	- Compare two-dimensional shapes and three-dimensional figures and sort them by their geometric properties	- Identify quadrilaterals and three-dimensional figures and classify them by their geometric properties, and compare various angles to benchmarks
Specific Expectations		
– Distinguish between the attributes of an object that are geometric properties and the attributes that are not geometric properties, using a variety of tools		
– Locate the line of symmetry in a two-dimensional shape		- Draw the lines of symmetry of two-dimensional shapes, through investigation using a variety of tools and strategies
– Identify and describe various polygons (i.e., triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons) and sort and classify them by their geometric properties (i.e., number of sides or number of vertices), using concrete materials and pictorial representations	- Identify and compare various polygons (i.e., triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons) and sort them by their geometric properties (i.e., number of sides; side lengths; number of interior angles; number of right angles)	- Identify and compare different types of quadrilaterals (i.e., rectangle, square, trapezoid, parallelogram, rhombus) and sort and classify them by their geometric properties
– Identify and describe various three-dimensional figures (i.e., cubes, prisms, pyramids) and sort and classify them by their geometric properties (i.e., number and shape of faces), using concrete materials		
– Create models and skeletons of prisms and pyramids, using concrete, and describe their geometric properties (i.e., number and shape of faces, number of edges)	– Construct rectangular prisms, and describe geometric properties (i.e., number and shape of faces, number of edges, number of vertices) of the prisms	- Identify and describe prisms and pyramids, and classify them by their geometric properties (i.e., shape of faces, number of edges, number of vertices), using concrete materials
	– Compare and sort prisms and pyramids by geometric properties (i.e., number and shape of faces, number of edges, number of vertices), using concrete materials	
	– Use a reference tool to identify right angles and to describe angles as greater than, equal to, or less than a right angle	- Identify benchmark angles (i.e., straight angle, right angle, half a right angle), using a reference tool and compare other angles to these benchmarks
	– Compare various angles, using concrete materials and pictorial representations, and describe angles as bigger than, smaller than, or about the same as other angles	– Relate the names of the benchmark angles to their measures in degrees

GEOMETRY AND SPATIAL SENSE: Geometric Relationships

Grade 2	Grade 3	Grade 4
Overall Expectation #2		
- Compose and decompose two-dimensional shapes and three-dimensional figures	- Describe relationships between two-dimensional shapes, and between two-dimensional shapes and three-dimensional figures	- Construct three-dimensional figures, using two-dimensional shapes
Specific Expectations		
– Cover an outline puzzle with two-dimensional shapes in more than one way	– Solve problems requiring the greatest or least number of two-dimensional shapes needed to compose a larger shape in a variety of ways	
– Compose and describe pictures, designs, and patterns by combining two-dimensional shapes		
– Compose and decompose two-dimensional shapes	– Identify congruent two-dimensional shapes by manipulating and matching concrete materials	
	– Explain the relationships between different types of quadrilaterals	
		- Construct a three-dimensional figure from a picture or model of the figure, using connecting cubes
– Build a structure using three-dimensional figures, and describe the two-dimensional shapes and three-dimensional figures in the structure	– Identify and describe the two-dimensional shapes that can be found in a three dimensional figure	– Construct three-dimensional figures, using only congruent shapes
	– Describe and name prisms and pyramids by the shape of their base	– Construct skeletons of three-dimensional figures, using a variety of tools, and sketch the skeletons
		– Draw and describe nets of rectangular and triangular prisms
		– Construct prisms and pyramids from given nets

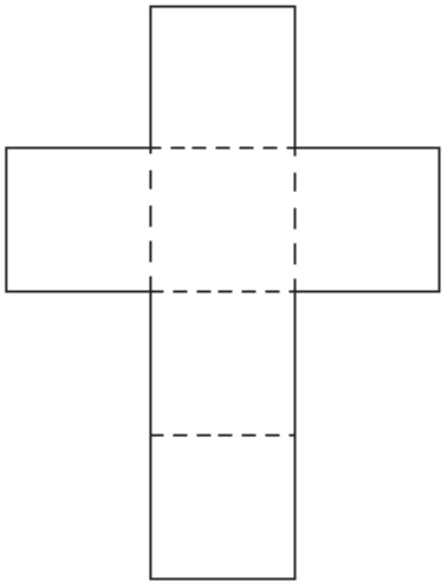
GEOMETRY AND SPATIAL SENSE: Location and Movement

Grade 2	Grade 3	Grade 4
Overall Expectation #3		
- Describe and represent the relative locations of objects, and represent objects on a map	- Identify and describe the locations and movements of shapes and objects	- Identify and describe the location of an object, using a grid map, and reflect two-dimensional shapes
Specific Expectations		
– Describe the relative locations and the movements of objects on a map	– Describe movement from one location to another using a grid map	- Identify and describe the general location of an object using a grid system
– Draw simple maps of familiar settings, and describe the relative locations of objects on the maps	– Identify flips, slides, and turns, through investigation using concrete materials and physical motion, and name flips, slides, and turns as reflections, translations, and rotations	- Identify, perform, and describe reflections using a variety of tools
– Create and describe symmetrical designs using a variety of tools	– Complete and describe designs and pictures of images that have a vertical, horizontal, or diagonal line of symmetry	– Create and analyse symmetrical designs by reflecting a shape, or shapes, using a variety of tools, and identify the congruent shapes in the designs

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #1
Spring 2006

14 Which figure can be formed using the net shown?

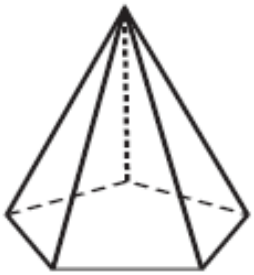


- ○ Cube *
- ○ Cylinder
- ○ Square-based pyramid
- ○ Sphere

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #1
Spring 2006

19 What is the total number of edges on the figure shown below?

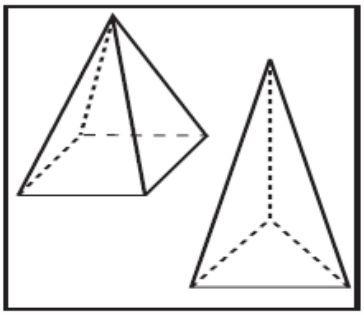


- ○ 5
- ○ 8
- ○ 10 *
- ○ 12

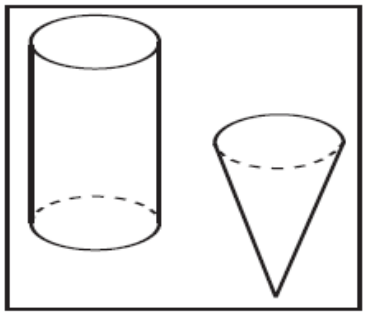
GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #1
Spring 2006

11 Alana sorts 4 figures into Groups W and X as shown.

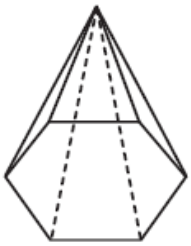


Group W



Group X

In which group should Alana place the following figure?



Explain your thinking.

Alana should place the figure in Group _____.

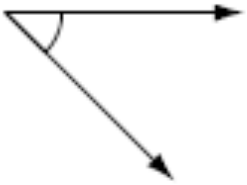
GRADE THREE EQAO QUESTIONS: Geometry

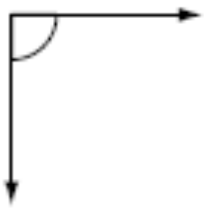
Overall Expectation #1
Spring 2007

14 Vera draws the angle shown below.

Which angle has a measure greater than Vera's angle?

○ 

○ 

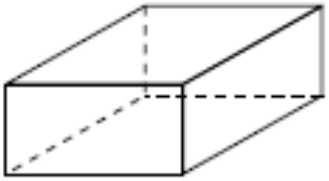
○ 

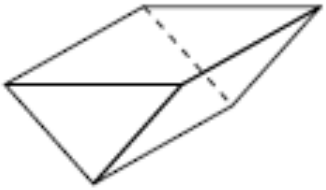
○ 

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #1
Spring 2007

25 Which figure has exactly 9 edges and 6 vertices?

○ 

○ 

○ 

○ 

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #1
Spring 2008

34 Look at the chart below.

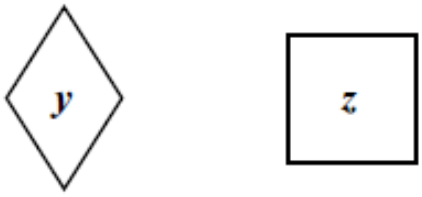
	□	△	*y*	*z*
Right Angle	✓	x	x	x
4 Sides	✓	x	✓	x

Legend
✓ = Yes
x = No

Which of the following shapes could belong in place of *y* and *z*?

○ 

○ 

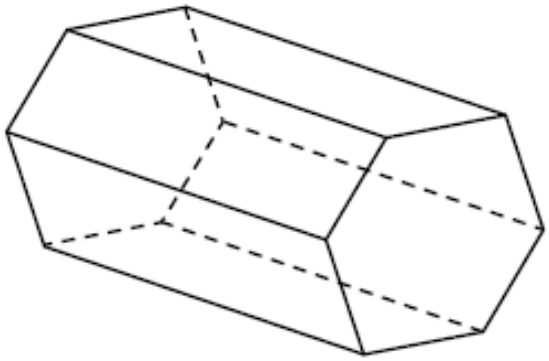
○ 

○ 

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #1
Spring 2008

35 What are the total numbers of vertices, faces and edges on the figure shown below?

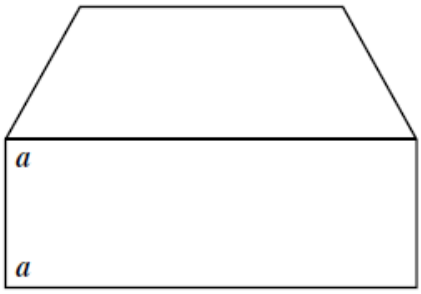


- ○ 6 vertices, 8 faces, 6 edges
- ○ 10 vertices, 7 faces, 13 edges
- ○ 12 vertices, 7 faces, 12 edges
- ○ 12 vertices, 8 faces, 18 edges

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #1
Spring 2008

28 Simon draws a house.



Simon's house has many sets of angles that are equal. Each angle in one set is marked with an *a*.

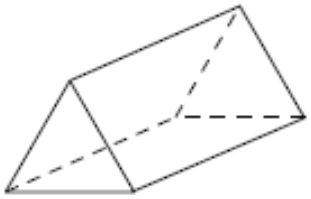
Find other sets of equal angles. Mark each set with a different letter.

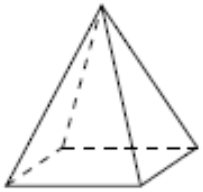
Compare each set to a right angle.

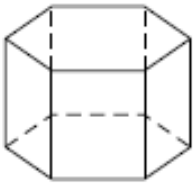
GRADE THREE EQAO QUESTIONS: Geometry

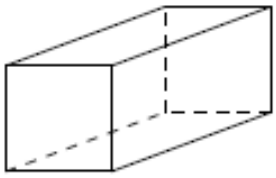
Overall Expectation #1
Spring 2009

36 Which figure below has the same number of vertices and faces?

○ 

○ 

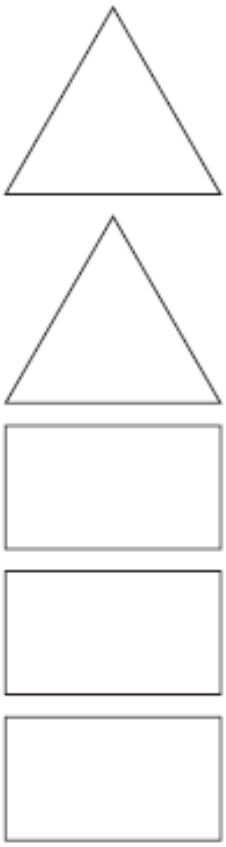
○ 

○ 

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #1
Spring 2010

22 Look at the following shapes.



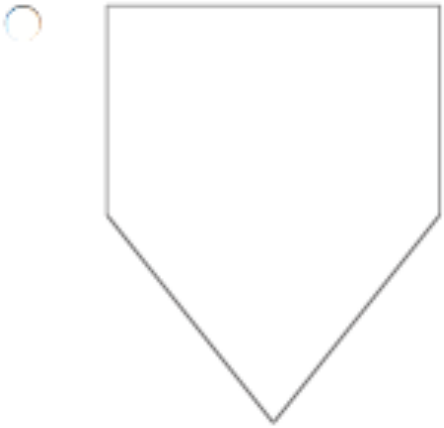
What 3-D figure can you make using all of the shapes?

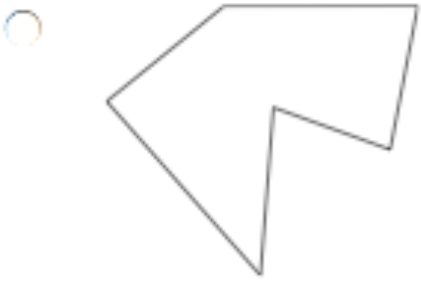
- ○ triangular prism
- ○ rectangular prism
- ○ square-based pyramid
- ○ triangular-based pyramid

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #1
Spring 2011

30 Which shape is a pentagon?





GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2006

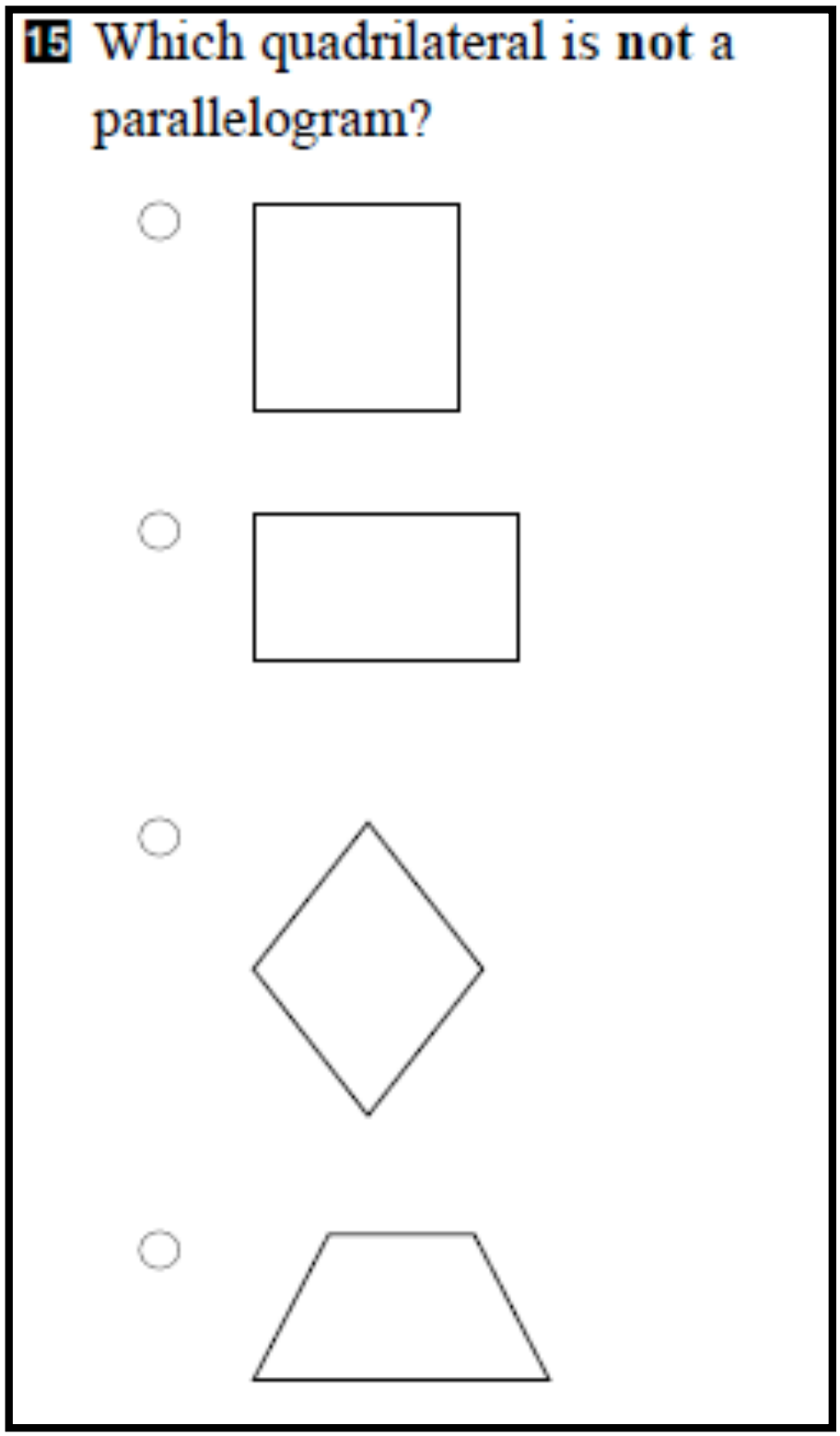
20 Which statement about a rectangle is always true?

- ○ It has a total of 3 sides.
- ○ Two sets of sides are parallel. *
- ○ It has only 1 line of symmetry.
- ○ All sides are of equal length.

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2007

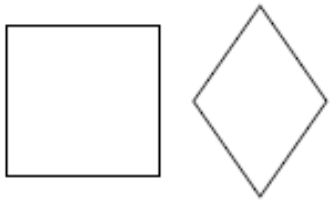
15 Which quadrilateral is **not** a parallelogram?



GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2007

29 Chloe says that a square is a special kind of rectangle. Harminder says that a rhombus is also a special kind of rectangle.



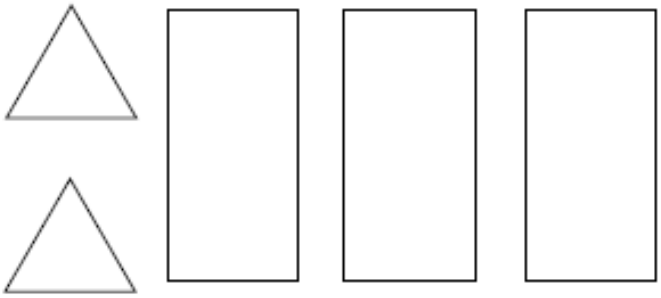
Are Chloe and Harminder both correct? Explain why or why not.

Explain your answer using geometric words.

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2008

22 Below are the faces of a 3-D figure.



What is the name of the figure?

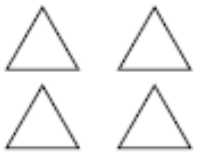
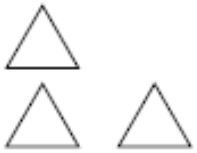
- ○ triangular-based pyramid
- ○ rectangular pyramid
- ○ rectangular prism
- ○ triangular prism

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2009

22 The chart below shows information about the faces of some pyramids.

Pyramids

Name	Base	Remaining sides
Square-based		
Triangular-based		
_____		

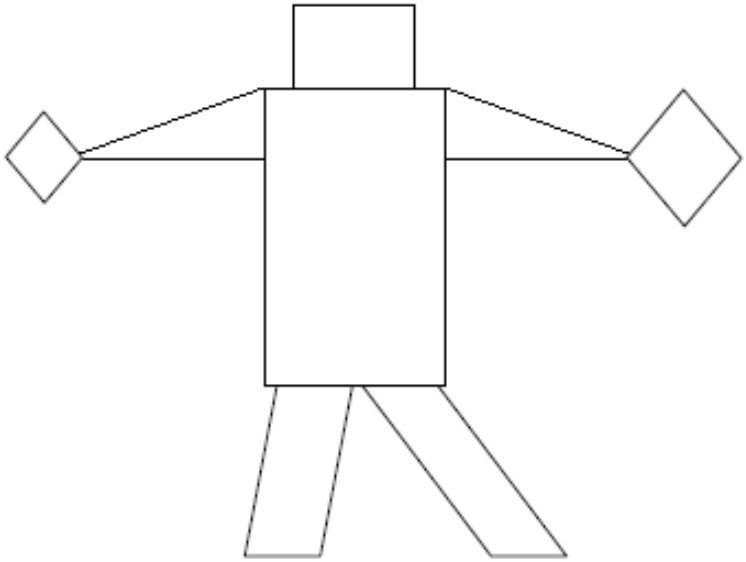
What pyramid name is missing from the chart?

- ○ octagonal-based
- ○ hexagonal-based
- ○ pentagonal-based
- ○ rectangular-based

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2009

34 Karen draws the picture below using 2-D shapes.



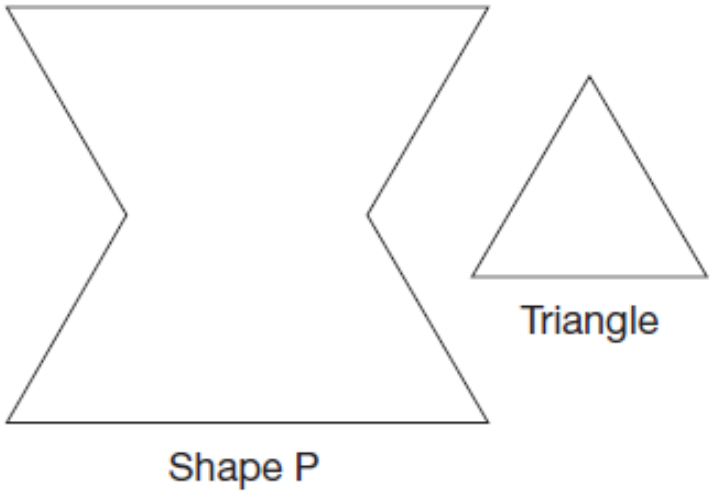
Which shapes are congruent in her picture?

- ○ triangles
- ○ rectangles
- ○ rhombuses
- ○ parallelograms

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2010

21 Look at the shapes below.



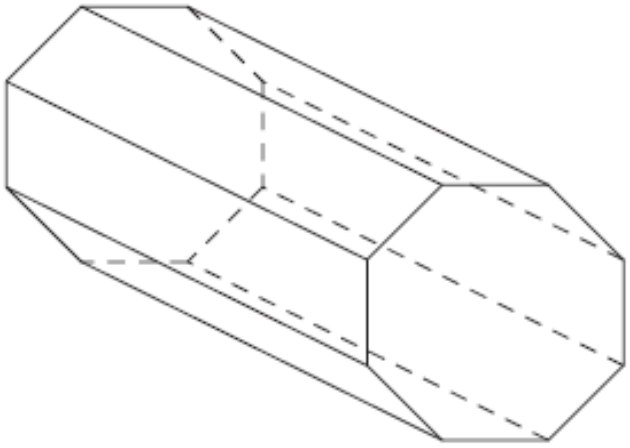
How many of the triangles are needed to cover Shape P completely?

- ○ 3
- ○ 4
- ○ 5
- ○ 6

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2010

35 Look at the prism below.



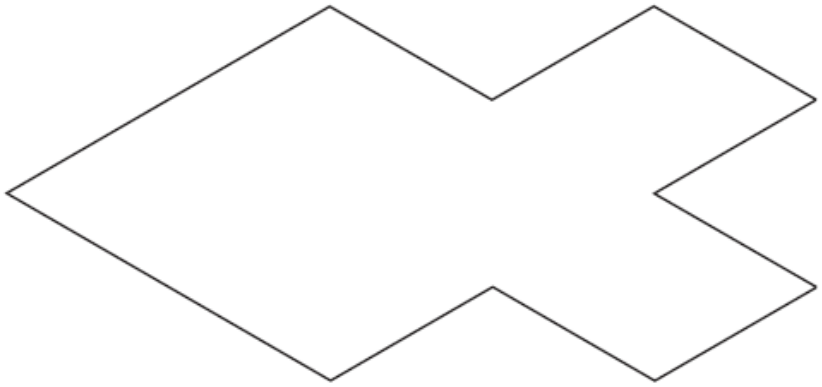
Which of the following describes all the faces of this prism?

- ○ 2 rectangles, 7 octagons
- ○ 2 rectangles, 8 octagons
- ○ 2 octagons, 7 rectangles
- ○ 2 octagons, 8 rectangles

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2010

7 The shape below has been made using pattern blocks.



Darius says, "I can cover this shape using 12 green triangles."

Adam says, "I can cover the same shape using 4 pattern blocks that are all different."

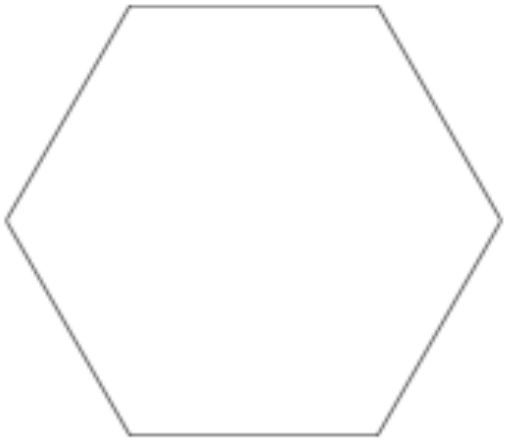
Show how Adam can cover the shape with 4 different pattern blocks.

Describe the relationship between Adam's pattern blocks and the green triangles.

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2011

25 Look at the hexagon below.



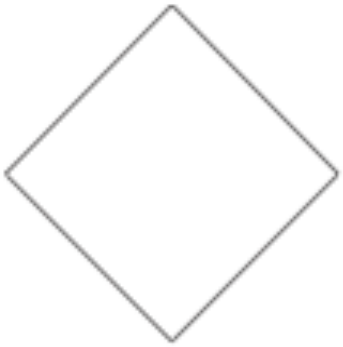
Which of the following sets of pattern blocks can be used to cover this hexagon with no gaps or overlap?

- 1 blue rhombus
- 2 red trapezoids
- 4 orange squares
- 7 green triangles

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2011

36 Which shape below is **not** a rhombus?



GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #2
Spring 2011

8 Look at the shapes below.

A B C D

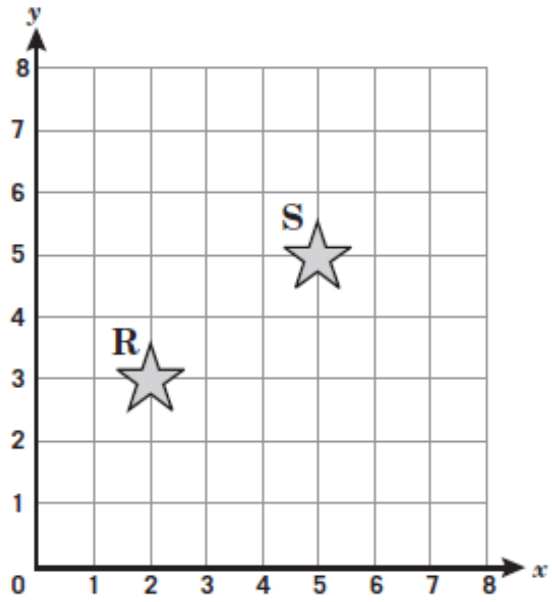
Complete the following table about these shapes.

Shapes that are parallelograms	Shapes that are **not** parallelograms
Explain your answers.	Explain your answers.

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2006

15 The result of a slide of the ☆ from Point R to Point S is shown on the coordinate grid below.



Which best describes the two-step slide of the figure from Point R to Point S?

- ○ 3 units left, then 1 unit down
- ○ 3 units left, then 2 units down
- ○ 3 units right, then 1 unit up
- ○ 3 units right, then 2 units up *

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2006

33 Ashley used a rule to make this repeating pattern.

Which sentence best describes the change in the direction of the shaded arrow in Ashley's pattern?

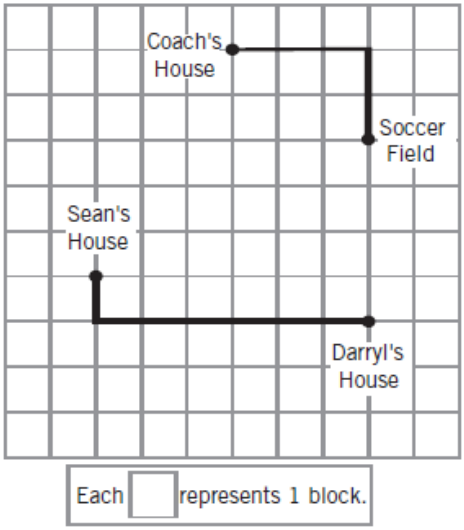
- ○ The arrow is flipped to point up each time.
- ○ The arrow is flipped to point down each time.
- ○ The arrow is rotated $\frac{1}{4}$ turn clockwise each time. *
- ○ The arrow is rotated $\frac{1}{4}$ turn counterclockwise each time.

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2006

30 A soccer coach uses the following map to show Sean and Darryl where the new soccer field is. The route from the coach's house to the soccer field is 3 blocks right then 2 blocks down.

Routes to the Soccer Field



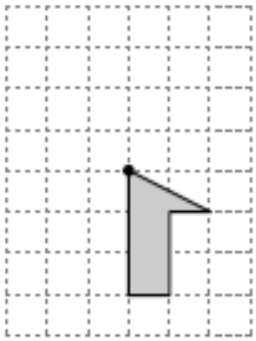
Describe a route from Sean's house to Darryl's house and then to the soccer field.

Describe a different route that Sean could take if he goes directly from his house to the soccer field.

GRADE THREE EQAO QUESTIONS: Geometry

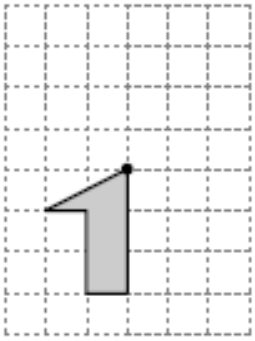
Overall Expectation #3
Spring 2007

24 Dana draws a shape on the grid below.

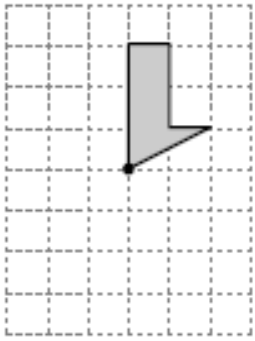


Dana's Shape

The following grids show Dana's shape after 2 different transformations.



Transformation 1



Transformation 2

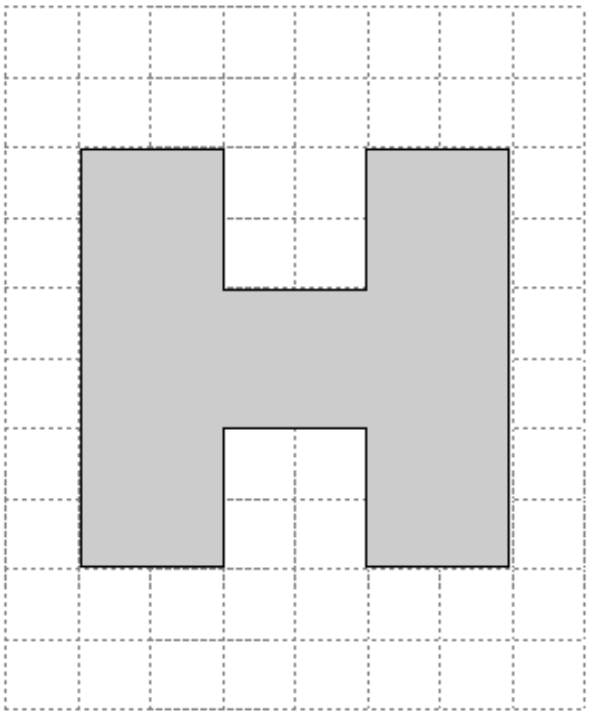
Which best describes each transformation of Dana's shape?

- ○ reflection and rotation
- ○ reflection and translation
- ○ rotation and rotation
- ○ rotation and translation

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2007

9 Does this shape have any lines of symmetry?

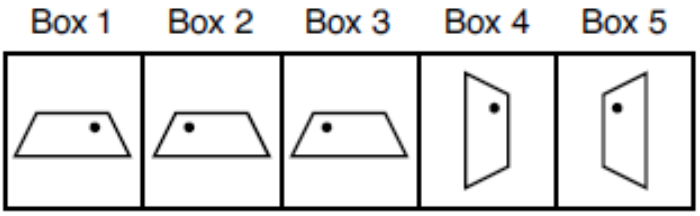


Justify your answer.

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2008

23 Which transformations have occurred, in order, from Box 1 to Box 5?

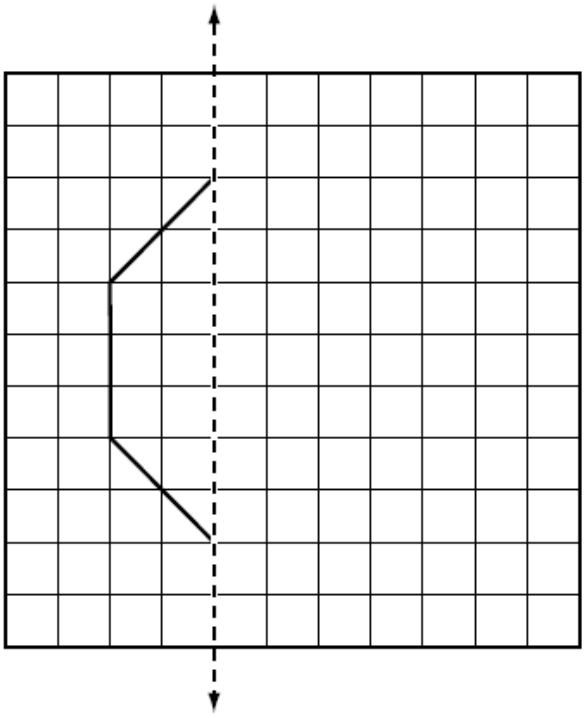


- ○ rotation, translation, rotation, reflection
- ○ reflection, translation, rotation, reflection
- ○ translation, translation, rotation, reflection
- ○ reflection, translation, rotation, translation

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2008

8 A line of symmetry and part of a shape are drawn.



Complete the missing side of the shape.

Does this shape have other lines of symmetry?

Explain your answer.

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2009

23 Look at the letters below. Count the lines of symmetry each letter has.

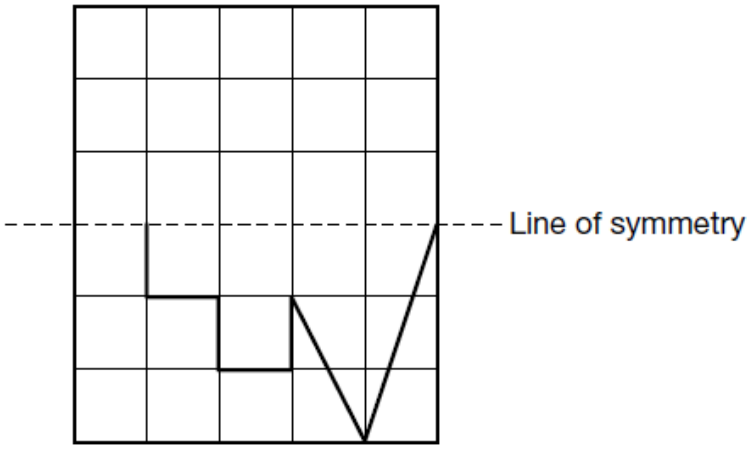
How many lines of symmetry are there in total?

- ○ 3
- ○ 4
- ○ 5
- ○ 6

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2009

9 Complete the shape on the grid so that it is symmetrical. Use the dashed line as a line of symmetry.

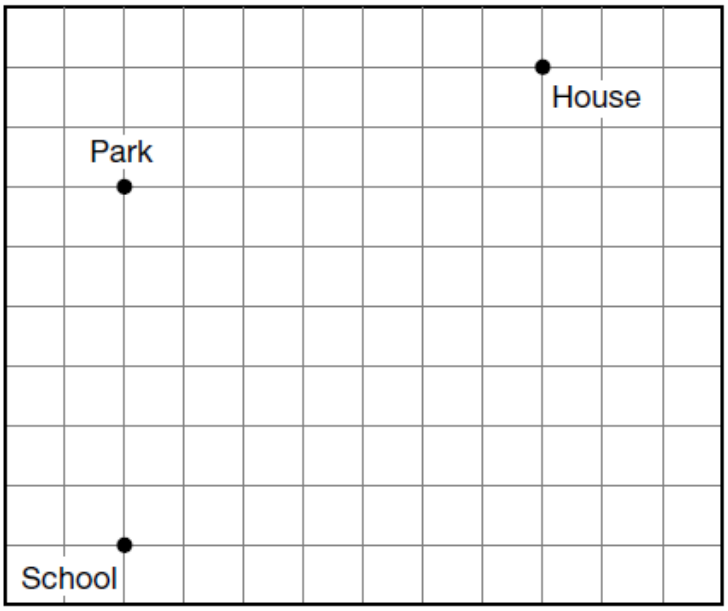


Explain how you know the completed shape is symmetrical.

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2009

29 Dale plays at the park each day after school.



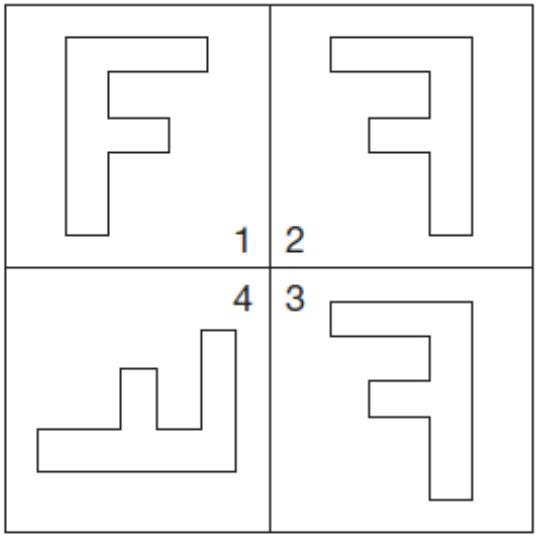
He walks only on the grid lines. Draw the shortest path he can take from the school to the park and then to his house.

Describe Dale's path.

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2010

33 Look at the grid below.



Which words describe the transformation of the letter F from Box 1 to Box 2 to Box 3 to Box 4?

- ○ translation, reflection, rotation
- ○ reflection, rotation, translation
- ○ reflection, translation, rotation
- ○ translation, rotation, reflection

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2010

25 Look at the letters below.

M O E X

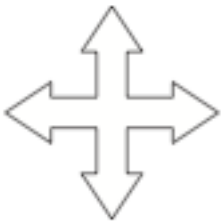
Which of the letters have more than one line of symmetry?

Justify your answer. Write about each letter.	
M	O
E	X

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2011

16 Which shapes have more than 2 lines of symmetry?

W 

X 

Y 

Z 

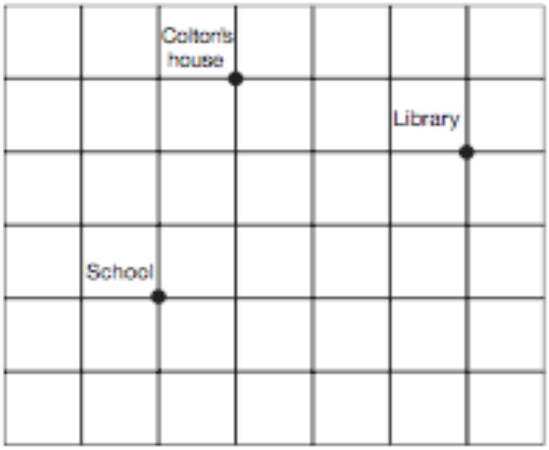
- W and X
- W and Y
- X and Z
- Y and Z

GRADE THREE EQAO QUESTIONS: Geometry

Overall Expectation #3
Spring 2011

9 When Colton leaves school, he needs to go to the library first and then home.

On the grid lines, draw the shortest path that Colton can take.



Describe Colton's path.